

CLAIMS**What Is Claimed Is:**

1. An apparatus, comprising:

a panel positioned at least partially into a sidewall of a furnace, said panel comprising
5 a plurality of openings for injecting a material through each of said openings
at least partially during the same time period.

2. The apparatus of claim 1, wherein said furnace is associated with an electric
arc furnace.

3. The apparatus of claim 1, wherein said panel comprises a front portion, a first
10 side portion, and a second side portion.

4. The apparatus of claim 3, wherein at least one of said first and second side
15 portions is positioned at a degree that is in a range of about 0 degrees to about 45 degrees
relative to said front portion.

5. The apparatus of claim 3, wherein said panel comprises a central opening, first
20 side opening, a second side opening, and a lower opening.

6. The apparatus of claim 5, wherein said central opening is positioned upon said
front portion.

7. The apparatus of claim 6, wherein said central opening comprises a cylindrical
25 area for stabilizing a flame.

8. The apparatus of claim 7, wherein said central opening is positioned at an
angle relative to a horizontal reference, such that lancing of a material is performed at an
angle relative to a horizontal reference.

9. The apparatus of claim 7, wherein said central opening comprises a cylindrical area that has a diameter between a range of about 38.1 millimeters to about 127 millimeters.

10. The apparatus of claim 7, wherein said central opening comprises a cylindrical
5 area that has a diameter between a range of about 63.5 millimeters and 88.9 millimeters.

11. The apparatus of claim 7, wherein a cylindrical path associated with the central opening has a length in the range of about 50.8 millimeters and 254 millimeters.

10 12. The apparatus of claim 7, wherein a cylindrical path associated with the central opening has a length in the range of about 88.9 millimeters and 177.8 millimeters.

13. The apparatus of claim 7, wherein a cylindrical path associated with the central opening has a length of about 101.6 millimeters.

15

14. The apparatus of claim 6, wherein said central opening is adapted to provide combustion oxygen.

15. The apparatus of claim 5, wherein said first side opening is positioned upon
20 said first side portion of said panel.

16. The apparatus of claim 5, wherein at least one of said first side opening and said second side opening is adapted to provide a secondary combustion oxygen.

25 17. The apparatus of claim 5, wherein said second side opening is positioned upon said first side portion of said panel.

18. The apparatus of claim 5, wherein said lower opening is positioned upon a lower shell of said front portion of said panel.

30

19. The apparatus of claim 18, wherein said lower opening is positioned at an angle relative to a horizontal reference.

20. The apparatus of claim 19, wherein said lower opening is adapted to provide a particulate injection.

21. The apparatus of claim 5, wherein said panel comprises a plurality of lower openings.

22. The apparatus of claim 5, wherein said panel comprises a plurality of first side openings.

23. The apparatus of claim 5, wherein said panel comprises a plurality of second side openings.

24. The apparatus of claim 5, wherein a stream of material injected through at least one of said first and second side openings is injected at an angle in the range of about 0 degrees to about 90 degrees.

25. An electric arc furnace, comprising:
a roof;
a lower shell;
an upper shell comprising a furnace portion enclosed by a sidewall; and
a panel positioned at least partially into said sidewall of said furnace portion, said panel comprising a plurality of openings for injecting a material through each of said openings at least partially during the same time period.

26. The electric arc furnace of claim 25, wherein said panel comprises a front portion, a first side portion, and a second side portion.

27. The electric arc furnace of claim 26, wherein said panel comprises a central opening, first side opening, a second side opening, and a lower opening.

28. The electric arc furnace of claim 27, wherein said central opening is
5 positioned upon said front portion.

29. The electric arc furnace of claim 28, wherein said central opening comprises a cylindrical area for stabilizing a flame.

10 30. The electric arc furnace of claim 29, wherein said central opening is positioned at an angle relative to a horizontal reference, such that lancing of a material is performed at an angle relative to a horizontal reference.

31. The electric arc furnace of claim 30, wherein said central opening is adapted to
15 provide combustion oxygen.

32. The electric arc furnace of claim 28, wherein said first side opening is positioned upon said first side portion of said panel.

20 33. The electric arc furnace of claim 28, wherein at least one of said first side opening and said second side opening is adapted to provide a secondary combustion oxygen.

34. The electric arc furnace of claim 33, wherein said secondary combustion oxygen is controlled by a back-pressure regulator.

25

35. The electric arc furnace of claim 33, wherein said secondary combustion oxygen is controlled by pulsating valve.

36. The electric arc furnace of claim 33, wherein said secondary combustion
30 oxygen is controlling an injector to inject the secondary combustion oxygen.

37. The electric arc furnace of claim 28, wherein said second side opening is positioned upon said first side portion of said panel.

38. The electric arc furnace of claim 28, wherein a lower opening is positioned
5 upon a lower shell of said front portion of said panel.

39. The electric arc furnace of claim 38, wherein said lower opening is positioned at an angle relative to a horizontal reference.

10 40. The electric arc furnace of claim 39, wherein said lower opening is adapted to provide a particulate injection.

41. The electric arc furnace of claim 28, wherein said panel comprises a plurality of lower openings.

15

42. The electric arc furnace of claim 28, wherein said panel comprises a plurality of first side openings.

43. The electric arc furnace of claim 25, wherein said roof, said upper shell, and
20 said a lower shell define a region in which melting and refining reactions occur.

44. The electric arc furnace of claim 25, further comprising a pressure regulator for controlling a primary oxygen flow and a secondary oxygen flow.

25 45. The electric arc furnace of claim 44, wherein said pressure regulator provides a backpressure of about 75 psig.

46. The electric arc furnace of claim 44, further comprising a pulsating valve for pulsing the secondary oxygen flow.

30

47. A method for increasing a spatial coverage of energy, comprising:
positioning a panel at least partially within a sidewall of a furnace; and
injecting at least partially during the same time period, a primary combustion
material, a secondary combustion material, and a particulate material, into
said furnace.

48. The method of claim 47, further comprising providing a panel that comprises a
plurality of openings for injecting a material through each of said openings at least partially
during the same time period.

49. The method of claim 48, wherein providing said panel comprises providing
primary combustion oxygen, secondary combustion oxygen, and a particulate injection at
least partially during the same time period.

50. The method of claim 47, wherein said method for increasing a spatial
coverage of energy further comprises a method for increasing spatial coverage of chemical
energy.